

Nathan J. Zhang

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PROFILE	Electrical engineering student with Semiconductor & materials reliability experience including microelectronics imaging, defect analysis, and electronic materials characterization. Experience with FPGA development and Agentic AI.	
EDUCATION	M.S. Electrical Engineering , Arizona State University	Expected December 2027
	B.S. Electrical Engineering , Arizona State University - Barrett Honors	Expected December 2026
	GPA: 3.8/4.0, Awards: Dean's List x6	
	Relevant Coursework Quantum Mechanics, Solid State Devices, Electronic Materials, HDL, Digital Design, Circuits I, II & III, Signals and Systems, Random Signal Analysis, Electromagnetics I & II	
	Club Leadership: (CHASA President) Led operations for 100+ member organization, driving strategic planning and logistics to foster unity and fellowship among students.	
EXPERIENCE	Intel Corporation - Process Integration and Yield Engineering Intern	May 2026-Present
	- Supported two cross-functional teams developing novel thermal interface materials (TIM) and assembly processes; presented weekly thermal FA updates and analyzed characterization data. - Developed best-known methods (BKMs) for nanoindentation to quantify mechanical properties. - Investigated TIM diffusion through semiconductor assemblies to reduce crack and void formation.	
	Salt River Project - Transmission Planning Intern	Sep 2025-May 2026
	- Automated short-circuit modeling for 462 transformers using Python for an interdepartmental project, saving hundreds of engineering hours - Verified MRID mappings for company-wide database migration	
	HarvardX/edX - Data Science Program	Oct 2021-Jan 2022
	Certificate IDs: R Basics, Visualization, Probability, Inference and Modeling, Productivity Tools	
PROJECTS	ML Microelectronic Authenticator - Team Lead	Jan 2026-Present
	- Lead development of an imaging-based authentication system for microelectronic components using high-magnification microscopy and multi-angle illumination. - Perform sample preparation, staging, and imaging of microelectronic packages to capture sub-millimeter identifiers and surface morphology. - Analyze reflective particle constellations and microstructural features to enable fast component identification and accurate counterfeit detection.	
	Signals Agent , A Multiscale FFT Analysis & AI Reasoning Tool (Github)	May 2025-Aug 2025
	- Developed a "signals agent" capable of analyzing noisy audio using multiscale FFTs, frequency/time binning, and contextual web search via Perplexity API. - Processes M4A/MP3 files, segments spectrally, identifies dominant frequency trends, and zooms into interesting regions for deeper analysis. Built with a tool-based ReAct agent architecture. - Outputs CSV-formatted time-frequency matrices, colorized spectrograms in the terminal (Rich), and natural-language summaries with citations.	
	FPGA-Based Digital Systems on DE0-CV Board (Altera Cyclone V)	Jan 2024-Apr 2025
	- Designed and implemented a custom microprocessor with an instruction set supporting arithmetic, jumps, and immediate loads, including a register file, ALU, and instruction memory. - Used VGA signal generation to display animation, demonstrating timing and raster synchronization.	
SKILLS	Technical SystemVerilog, Python, Java, Git, Cadence, SPICE, Quartus Prime, ModelSim, Arduino, Qiskit, MATLAB, $\LaTeX$ Tools SEM (FEI/Quattro ESEM, Insitu Hot Stage), nanoindenter, 2D X-Ray, Ion Mill, Allied Polisher, optical microscopy, 4-point probe, IV/CV measurements, Oscilloscope, Multimeter, Curve Tracer Interests Semiconductor device design, chip manufacturing and packaging assembly, Embedded Systems	